Designing a Rain Garden

1. Determine the size of your rain garden by estimating your roof area or driveway square footage. The garden should be about one-third the size of the area providing runoff.

2. Choose a spot at least 10 feet away from your foundation, and down-slope from your downspout, sump pump outlets, or other runoff source.

3. Dig a shallow, flat-bottomed hole with gradually sloping sides. The average depth of a rain garden is 6"-12". Have your soil tested. If your soil is clay or loam, you may want to test your soil to determine its water retention characteristics.

4. Test the overflow pattern. Pillory the excavated area with water and observe the overflow to ensure it flows away from buildings.

5. Direct your runoff into your rain garden if necessary by digging a shallow channel or using a drainpipe.

6. Plant! Mix your amendments in the bottom of the garden (if you are using them). Place the plants at the appropriate spacing, then check your arrangement before digging holes and planting. Evaluate the texture and color of adjacent plants and make any design adjustments.

7. Mulch: add a 3-inch layer of mulch. If you add mulch before planting, simply move it aside when digging holes, or after planting, place mulch loosely around plants. Unreated shredded hardwood is best--it won't float out of the garden, but any mulch is acceptable.

Calculate Your Rain Garden Size

How to figure the amount of space and number of plants you'll need:

How much water? Define your runoff area (e.g. 200 sq. ft of roof or driveway).

What size garden? Divide the runoff area by 3 to obtain the rain garden size (200-3-66.6 or 67 sq. ft) or fit the garden to your space.

How many plants? Your garden size divided by 2.25 for plants spaced 3' apart. (67 divided by 2.25=29.7. Round to 30. So 30 plants are needed for the 67 sq. ft garden in our example.)

Use same calculation to add a rain garden to any drainage area.

Percolation Test

Test your soil to calculate how much water will infiltrate in 24 hours.

1. Dig a 12" deep hole.
2. Fill with water. Let saturate for an hour.
3. Refill hole. Mark water level.
4. Measure water level after 1, 2, & 4 hours.
5. Calculate how much will infiltrate in 24 hours.

Fix Your Soil

If the composition of the soil does not allow for proper drainage (see percolation test) you may need to fix it. Excavate to twice the desired depth, then fill the bottom half with the amendment materials. You can mix materials right in your garden:

- 50% sand + 25% topsoil + 25% organic matter.

What About Mosquitoes? Stormwater runoff entering your rain garden should disappear within 24-48 hours of a rain event. Mosquitoes need at least a week of standing water to complete their life cycle. A poorly maintained bird bath or rain gutter is a more likely breeding ground. In time, your rain garden will become its own ecosystem, attracting hungry bats, dragonflies and other predators of the mosquito, thus naturally eradicating them from your area.

For more information about rain gardens, rain barrels, and other ways you can help with local efforts to keep water clean, visit:

www.jamesriverbasin.com • www.springfieldmo.gov/stormwater • www.watershedcommittee.org

What Is a Rain Garden?

Rain gardens are shallow depressions filled with native plants designed to catch and absorb storm water runoff from roofs, streets, parking lots and other areas. Storm water runoff can negatively impact our waterways by increasing erosion and contributing harmful pollutants picked up from yards, streets, and parking lots. Rain gardens help reduce these negative impacts and recharge the groundwater aquifer by utilizing storm water runoff as a resource rather than channeling it to storm drains which lead directly to area creeks, rivers and lakes. Water that is caught in a rain garden either infiltrates into the ground, is taken up by plant roots, or evaporates into the air. Native plants are a good choice for rain gardens because they are adapted to our local growing conditions. They have massive root systems that keep soil from eroding, help water soak into the ground, and keep the plants alive during droughts. Native plants are also a vital component in our local web of life as they provide food and shelter to insects including pollinators.

Local Rain Garden Demonstration Projects:

For more information and photos: www.springfieldmo.gov/stormwater

1. Springfield-Greene County Library Center, 4653 S. Campbell Ave
2. Rushview Neighborhood, 1160 Block S. Weller Ave
3. First Unitarian Universalist Church, 3343 E. Battlefield Rd
4. Watershed Center, 2450 E. Valley Water Mill Rd
5. Community Foundation of the Ozarks, 425 E. Trafficway St
6. Horace Mann Elementary, 3745 S. Broadway Ave
7. Rutledge-Wilson Community Farm Park, 3825 W. Farm Rd. 146
8. Cruse Dog Park, Grand and Kansas Expwy
9. Ozark 4-H Building, Finley River Park
10. Park Hill Subdivision, Nixa
11. Battlefield City Hall, 3343 S. Tower Drive
Rain Garden Ideas

This design features mainly grasses mixed with flowering plants in white and purple. Grasses work well to slow the flow of water where it enters the garden. Colors correspond to bloom.

- **PS** = Palm Sedge
- **PBS** = Prairie Blazing Star
- **LBS** = Little Bluestem
- **TS** = Tussock Sedge
- **WH** = Wild Hydrangea

This design features a colorful mix of plants that bloom from May through October. Colors correspond to bloom.

- **BFL** = Bunchflower Lily
- **BBG** = Bottlebrush Grass
- **OCF** = Orange Coneflower
- **FGB** = Foglove
- **SBS** = Shining Blue Star
- **JPM** = Joe Pye Weed
- **SW** = Sneezeweed

### PLAN

**Plant height & blooming.** Place taller plants in the middle for a rain garden that is viewed from all sides, or place in the back if your garden is along a fence. Think about when blooms appear. Choose a variety of plants that bloom throughout the growing season. Use this worksheet to sketch your ideas estimating the garden’s size and shape, plant selection, placement and quantity, rock, or any other design features. Scale: 1/2" = 1'